

10/665,322

1. 1-17 (Cancelled).

18. (Currently Amended) A refractory metal liner, comprising:

a barrier comprising a passivating agent, said barrier impeding a subsequent reaction of at least a top half of said refractory metal liner with an adjacent conductive layer, ~~an amount of said passivating agent in said barrier being less than an amount necessary to form a stoichiometric combination of said refractory metal liner and said passivating agent~~

wherein said barrier is limited to a central portion of said refractory metal.

19. (Currently Amended) The refractory metal liner in claim 18, ~~wherein said barrier is positioned in a central portion of said refractory metal~~ wherein impurities from said adjacent conductive layer are limited to said top half of said refractory metal liner.

20. (Currently Amended) The refractory metal liner in claim 19, wherein said barrier impedes impurities from diffusing from said ~~first~~ adjacent conductive layer through said refractory metal.

21. (Original) The refractory metal liner in claim 20, wherein said impurities comprise silicon impurities.

22. (Original) The refractory metal liner in claim 19, wherein a second conductive layer is positioned over said refractory metal, said barrier impeding impurities from diffusing from said second conductive layer through said refractory metal.

23. (Original) The refractory metal liner in claim 22, wherein said impurities comprise fluorine impurities.

10/665,322

24. (Original) The refractory metal liner in claim 22, wherein:
said refractory metal comprises one of tungsten, titanium, molybdenum and nickel; and
said passivating agent comprises one or more of nitrogen and chlorine.
25. (Currently Amended) An electrical connection in an integrated circuit chip, said electrical connection comprising:
a first conductive layer;
a liner on said first conductive layer, said liner including a barrier, said barrier impeding first impurities from diffusing from said first conductive layer through said liner; and
a second conductive layer over said liner, wherein said barrier impedes said second impurities from diffusing from said second conductive layer through said liner,
wherein said barrier is limited to a central portion of said liner, wherein said first impurities are positioned within the portion of said liner adjacent said first conductive layer and second impurities are positioned within the portion of said liner adjacent said second conductive layer.
26. (Original) The electrical connection in claim 25, wherein said barrier comprises a concentration of a passivating agent less than an amount necessary to form a stoichiometric combination with said liner.
27. (Currently Amended) The electrical connection in claim 26, wherein:
said ~~refractory metal~~ liner comprises one of tungsten, titanium, molybdenum and nickel;
said passivating agent comprises one or more of nitrogen and chlorine; and
said second conductive layer comprises one of tungsten and copper.
28. (Original) The electrical connection in claim 25, wherein said impurities comprise one or more of silicon impurities and fluorine impurities.

10/665,322

29. (Currently Amended) An integrated circuit chip comprising:
a first conductive layer;
a liner on said first conductive layer, said liner including a barrier, said barrier impeding first impurities from diffusing from said first conductive layer through said liner; and
a second conductive layer over said liner, wherein said barrier impedes said second impurities from diffusing from said second conductive layer through said liner,
wherein said barrier is limited to a central portion of said liner, wherein said first impurities are positioned within the portion of said liner adjacent said first conductive layer and second impurities are positioned within the portion of said liner adjacent said second conductive layer.
30. (Original) The integrated circuit chip in claim 29, wherein said barrier comprises a concentration of a passivating agent less than an amount necessary to form a stoichiometric combination with said liner.
31. (Currently Amended) The integrated circuit chip in claim 30, wherein:
said ~~refractory metal~~ liner comprises one of tungsten, titanium, molybdenum and nickel;
said passivating agent comprises one or more of nitrogen and chlorine; and
said second conductive layer comprises one of tungsten and copper.
32. (Original) The integrated circuit chip in claim 29, wherein said impurities comprise one or more of silicon impurities and fluorine impurities.